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QUOTATIONS

A LABORATORY FOR EUGENICS

WE publish this morning, and commend heartily to our readers, a very cogent appeal issued by the Francis Galton Laboratory Committee with the approval of the senate of the University of London, and signed by Lord Rosebery, the chancellor, Sir William Collins, the vice-chancellor, Sir Edward Busk, the chairman of convocation, Dr. Miers, the principal, and other members of the committee, asking for contributions towards a sum of £15,000 which is required in order to build the Galton Laboratory for eugenics. It will be remembered that the late Sir Francis Galton bequeathed the residue of his estate, amounting to about £45,000, to the university for the purpose of encouraging the study of National Eugenics, and that he expressed his hope that the university would see fit to preserve the capital wholly or almost wholly intact, not encroaching materially upon it for cost of building, fittings or library. This wish has been strictly respected, and the work of Professor Karl Pearson and his assistants has been conducted under great disadvantages in rooms wholly unsuited for the purpose, although with a vigor and efficiency of which ample evidence has been afforded by some of the controversies to which it has already given origin. The scheme now put forward on the part of the committee would provide a building adequate at least for present needs, on land given for the purpose by the university, and would provide for the safe stowage and the ready accessibility of the numerous pedigrees and other records which are being accumulated in excess of the power of examining and applying them. The committee point out in their appeal that future legislation is likely to deal largely with social problems, and declare it to be essential that the statistical facts on which such legislation may be based shall be analyzed in a purely scientific manner by workers who can give time and energy to investigation, quite independently of any ulterior end or party bias; and they are able to declare that a wide interpretation has already been placed upon Sir Francis Galton's recorded wish that the laboratory "should provide information, under

appropriate restrictions, to private individuals and to public authorities." They tell us that they are at present in possession of material, received from educational and health authorities in all parts of the country, which alone would afford three or four years of continuous labor for the existing staff, and the bulk of which has direct bearing upon the most important social and national problems of the day.—*London Times*.

SCIENTIFIC BOOKS

Hygiene and Public Health. By LOUIS C. PARKES, M.D., D.P.H., and HENRY R. KENWOOD, M.B., F.R.S. Edinburgh, D.P.H. London. Philadelphia, P. Blakiston's Son & Co. 1911. 8vo. Pp. 691. Fourth edition with 86 illustrations.

The fourth edition under the conjoint authorship of this work which had previously run through five editions has been carefully revised and brought up to date and will meet the needs of the practitioner and student in a most satisfactory manner. The book contains thirteen chapters, and treats in a very comprehensive manner the following subjects: (1) Water, (2) The Collection, Removal and Disposal of Excretal and other Refuse, (3) Air and Ventilation, (4) Warming and Lighting, (5) Soils and Building Sites, (6) Climate and Meteorology, (7) Exercise and Clothing, (8) Food, Beverages and Condiments, (9) The Contagia-Communicable Diseases and their Prevention—Hospitals, (10) School Hygiene, (11) Disinfection, (12) Statistics, (13) Sanitary Law and Administration.

In the chapter on Water we note with approval the authors' comments on "domestic filters, which are probably more often a source of pollution of the water than otherwise. It is usually considered that a filter requires no attention; it is consequently but rarely cleaned; the filtering material is seldom renewed and its pores become clogged with putrescible organic matter, which form a suitable nidus for the growth and development of living organisms which contaminate the filtered water. It is not unusual under such circumstances to find a considerably larger proportion of organic matter in the filtered

water than was present before filtration." These remarks are especially applicable to so-called gravity filters in which the filtering material is composed of vegetable or animal charcoal, sand, spongy iron, magnetic carbide of iron, polarite and carfural, the latter substance being a mixture of iron, charcoal and clay. It should be distinctly understood that there is no such a thing as a self-cleaning filter and even the Pasteur-Chamberland, Berkefeld and filters of the type in which the water is passed under pressure through hollow porous porcelain cylinders require periodical cleaning at short intervals by a hard brush—otherwise bacteria may in time grow through the cylinder and appear in the effluent; while it has been shown by Dr. Horrocks that the typhoid organisms are not able to grow through the walls of the Pasteur-Chamberland candle, they can grow through the walls of the Berkefeld candles "probably owing to the larger size of the lacunar spaces" and hence the Berkefeld candles should be sterilized in boiling water every third day. On the whole, we may conclude that it is clearly the duty of every community to supply a pure wholesome water, so that domestic filtration may not be necessary.

Among the diseases believed to be produced by impure water the authors refer especially to dyspepsia, dysentery and diarrhoea, typhoid fever, cholera and a number of entozoal infections. The relations of water to goiter and cretinism require further researches. In yellow fever, diphtheria, urinary calculi and rickets, formerly believed to be influenced by the drinking water, the evidence is so indefinite that the water theory has been generally abandoned. Recent observations by Schroeder, of the Department of Agriculture, and others indicate that the germs of tuberculosis are frequently present in the alvine discharges of tuberculous animals and man and by sewage pollution may thus infect the water supply.

Every sanitarian will heartily endorse the authors' chapter on the collection, removal and disposal of excretal and other refuse, because "the public health largely depends on

the efficiency with which refuse matters and especially human excretal refuse, are removed from towns; the health of towns in this country and abroad has very much improved, and the death rates have been permanently lowered, as the results of works of sewerage. . . . The pail system is undoubtedly the best for towns which will not enforce the adoption of water closets. In the case of Nottingham, where middens, pails and water-closets are in use in different parts of the town, Dr. Boolbyer has shown that the greatest prevalence of enteric (typhoid) fever is to be found in the houses with middens, and the least in the water-closeted houses, those with pails occupying an intermediate position."

The chapter on Air and Ventilation deals very fully with this important subject. Recent researches clearly reveal that neither an excess of CO₂ or a deficiency of oxygen were responsible for the effects of so-called vitiated air so long as the temperature and humidity of the air were kept low. As soon as the temperature and humidity were increased beyond certain limits there appeared, both in normal and in diseased persons who were submitted to experiment, the usual symptoms that occur when people are crowded together in one room—"i. e., feelings of drowsiness and headache, oppression, lassitude, giddiness, nausea, etc. These symptoms, however, could be relieved at once simply by reducing the temperature and humidity of the air to normal and they may be attributable to heat retention."

In summing up the discussion the authors suggest the importance of "additional research to ascertain the organic constituents (if any) of expired air and to differentiate them from the volatile products of decomposition arising from the general surface and other parts of the body. . . . It may, however, be the fact that whilst nothing of any importance is given off to the air by human respiration and transpiration, yet the air by such means is deprived of some vital element, with which we are unacquainted, and without which the highest state of bodily health and efficiency can not be maintained."

The causal relation of impure air to so-

called acute and chronic crowd poisoning has been recognized for years, and the effects of limited air space upon the undue prevalence of tuberculosis have been repeatedly observed in barracks, prisons, tenement houses, etc., and it is gratifying to be told that "at the present time, other conditions such as food, exercise, etc., remaining much the same, but more air-space and better ventilation having since been provided, the death rate from phthisis is considerably less amongst these servants and prisoners of the state than amongst the civil population."

In another part of the book (p. 456) the authors, in discussing the subject of tuberculosis and the principal predisposing causes, adduce statistical data gathered at Salford and supplied by Dr. Tatham indicating the rôle which "overcrowding" and foul air play in promoting the prevalence of this disease. "Thus, in districts where *all* the houses were built on the vicious system known as 'back to back' the phthisis death rate was 5.2 per 1,000 living; where 56 per cent. of the houses were so built, the rate was 3.6; where 23 per cent. only were so constructed, it was further reduced to 2.3; and lastly where there were *no* 'back to back' houses—that is to say, where all the houses were provided with some means of light and air both in front and to the rear—the rate was only 2.8 per 1,000. These results are all the more remarkable because, with the exception of the absence of means for thorough ventilation, the back to back houses on the whole were, in Dr. Tatham's opinion, in better sanitary condition than the other houses. Similar results have been obtained by other observers and by Dr. Darra Mair, of the Local Government Board (see Report of Medical Officer of the Local Government Board, 1908-9, p. xix)."

Space will not permit to refer in detail to the excellent chapters on Warming and Lighting, Soils and Building Sites, the Hygiene of Dwellings, Exercise and Clothing, all of which contain valuable information of general and personal interest. In the chapter on Food, Beverages and Condiments much space is devoted to Professor Chittenden's work on

"Physiological Economy in Nutrition with special reference to the Minimal Proteid Requirements of the Healthy Man." His elaborate experiments conducted with three classes of men, namely, *A*, five professional men (brain workers); *B*, thirteen United States army soldiers representative of men undergoing moderate physical work; and, *C*, a group of eight university students, all being thoroughly trained athletes and engaged daily in arduous physical exercise, have shown that health and vigor without loss of body weight, when equilibrium has once been established, can be maintained on a diet containing only from one third to one half of the proteid prescribed in the generally accepted dietary standards of Voit, Ranke, Moleschott and this without any increase and even, in some cases, with diminution in the non-nitrogenous elements of the diet. These investigations are of great economic and physiologic importance, since it involves not only a tremendous waste of expensive food material, but also a waste and loss of energy of vital forces in excessive metabolism and possibly also the accumulation of toxic waste products in the blood, which are believed to be the cause of degenerative diseases and premature death.

The authors declare that Professor Chittenden's conclusions "have been by no means universally accepted by physiologists and others interested in the construction of dietary scales, as they seem opposed to the general experience of civilized nations; and however interesting as indications of the adaptability of the human frame and functions to alterations in nutrition for comparatively short periods, the experiments were hardly of sufficiently long duration to warrant conclusions applicable to the life of a community for long periods. . . ."

We believe that there is no subject in the realm of physiology more important than the determination of reliable dietary standards. We have been extremely careful in other machines to study fuel economy and to use only those substances for the generation of force which are proper and no more than is absolutely necessary. Opposition fosters the spirit

of inquiry, and we sincerely trust that Professor Chittenden and his opponents may continue these painstaking experiments with a view of determining these vexed questions.

We quite endorse the views of the authors on the subject of food preservatives and have always maintained that the addition of chemicals should not be tolerated as long as we possess in pasteurization, sterilization, refrigeration, pickling and smoking efficient means. The book on page 354 refers to Dr. Wiley's feeding experiments in 1905-7 which demonstrated "that formic aldehyde, boric acid and salicylic acid are substances which when added to food, even in small quantities, may exercise a harmful effect on digestion and health. Few of these agents enter normally into the constitution of the human body, and at least they must be regarded as foreign bodies whose ingestion works no possible good, and which, not being foods, do not in any way make amends for the additional work of elimination which their presence demands. Moreover, they enable venders or manufacturers to deal with stale or badly prepared food, to the prejudice of the more honest tradesman."

The chapter on School Hygiene will be read with pleasure and profit by all who are interested in the prevention of disease and physical defects and the prevention of permanent disabilities.

Anti-typhoid Vaccination.—In the chapter on Communicable Diseases we note the following paragraph: "The value of anti-typhoid inoculations is now obtaining general recognition. The latest report of the results of anti-typhoid inoculation in the British army in India (Army Medical Department Report, 1908) show that the attack rate in inoculated men is reduced to rather less than one half, and the case mortality to about two thirds of the rates in men who have not been inoculated. The protection conferred by two inoculations appears to be somewhat greater than that conferred by one. The material generally used for anti-typhoid inoculation is a suspension of the dead bacilli obtained from a culture killed by heat."

We have observed very much better results quoted by Major F. F. Russell, of the medical corps United States army, in *The Military Surgeon* for June, 1909. The statistics were taken from Col. Leishman's report in the *Journal of the Royal Army Medical Corps*, 1909, XII, p. 166, and indicate that for one case of typhoid among the inoculated there are ten among the uninoculated and that for one death among the inoculated there are ten among the uninoculated. Dr. Russell also refers to the results of inoculations among the expeditionary forces in German Southwest Africa reported by Dr. Mursemold, showing that the man who refused inoculation was twice as liable to have typhoid as the man who accepted and four times as apt to die of it.

It is extremely gratifying to state that the greatest triumph in the prevention of typhoid fever in military camps has been achieved by the medical corps of the United States army, as shown by the experience of the maneuver division at San Antonio, Texas, from March 10 to July 10, 1911. This division, composed of 12,801 officers and men, had one case of typhoid fever and no death, while the second division of the seventh army corps, with 10,759 officers and men, assembled at Jacksonville, Fla., during the Spanish-American war in 1898, had 2,693 cases of typhoid fever with 248 deaths. "This division," writes Col. Kean, of the medical corps, in the *Journal of the American Medical Association*, August 26, 1911, "was not conspicuously unfortunate in its typhoid record for that time and is selected because of the close similarity of its conditions of service to those of the maneuver division. The two divisions were encamped in nearly the same latitude and for about the same length of time, and each had a good camp site and an artesian water supply of unimpeachable purity."

While it is true that camp sanitation was rigidly enforced, especially as regards the disposal of wastes, no new sanitary principle was evolved, and we are forced to conclude that the protective inoculations played the most important rôle. Anti-typhoid vaccination was

introduced into the United States army largely through the efforts of Major Russell, of the Army Medical School, and was made compulsory for the officers and men of the maneuver division. Dr. Russell recently wrote me that over 45,000 of our troops have now been vaccinated without any untoward results. He says: "This is the first time in the history of preventive medicine that compulsory immunization against typhoid fever has been used, and no military camps have ever been so free from this disease."

We have given considerable space to the presentation of this subject, not only because it is a distinct triumph for American preventive medicine, but the lessons taught should be applied in civil practise so as to avert a needless sacrifice of life and money from one of the so-called preventable diseases.

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Evolution. By J. ARTHUR THOMSON and PATRICK GEDDES. No. 14 in the Home University Library of Modern Knowledge. New York, H. Holt & Co. 1911. Pp. 256. Price, 75 cents.

Another successful collaboration by the two well-known biological writers, Professors Geddes and Thomson, has produced a small but stimulating volume, "Evolution," which is the fourteenth in the new English-American series called, rather heavily, the Home University Library of Modern Knowledge. The earlier collaboration by these writers twenty years ago resulted in a book, "The Evolution of Sex," that has become a biological classic.

"Evolution" is, of necessity, largely a restatement of things already frequently and variously stated. The series to which it belongs is meant for popular consumption and has a standard that determines pretty definitely the activities of its contributors. The facts and their significance, where this significance is not too uncertain, and these facts and inductions set out with some attention to interestingness as well as clearness and accuracy; these are requirements of the series. The authors of "Evolution" have, of course,

no difficulty in making their volume almost a model from this point of view.

But they have been able to add color and personal character to the book, to boot. Especially in the chapter (VI.) on "Organism, Function and Environment, in Relation to Evolution," and in VII., "Evolution Theories in their Social Origins and Interactions," and VIII., "The Evolution Process Once More Interpreted," is the personal point of view revealed. And these chapters, especially, therefore, will interest "constant readers" of evolution literature.

I have lately had occasion to say, in a review of another of Professor Thomson's books, that he is a good selectionist; though not a bad one; that is, that he is not a selectionist bigot. "However," it was added, "Darwinism for him rests on, or is, mostly selection." It is of particular interest therefore, to note that in this latest personal utterance of Professor Thomson, Darwinism, or, more fairly, evolution, is less and less chiefly selection. Indeed the closing sentences in the present book—of course they are words of Geddes and Thomson, not Thomson alone—are:

Natural selection remains still a vera causa in the origin of species; but the function ascribed to it is practically reversed. It exchanges its former supremacy as the supposed sole determinant among practically indefinite possibilities of structure and function, for the more modest position of simply accelerating, retarding or terminating the process of otherwise determined change. It furnishes the brake rather than the steam or the rails for the journey of life; or in better metaphor, instead of guiding the ramifications of the tree of life, it would, in Mivart's excellent phrase, do little more than apply the pruning-knife to them. In other words, its functions are mainly those of the third Fate, not the first: of Siva, not of Brahma.

The whole chapter of which this paragraph is the conclusion is a plea for a sort of vitalism—to misuse again, probably, a usually misused word. It is a sort of vitalism that assumes some cause, inherent in life or pertinent only to life, capable of producing a "definite variation, its branchings essentially dichotomous rather than indefinite, with prog-